Z8F04A28100KITG

Z8 Encore! XP® F042A Series Development Kit

User Manual

UM016608-0608

Revision History

Each instance in the following table reflects a change to this document from its previous revision. To see more detail, click the appropriate link in the table.

Date	Revision Level	Description	Page No
June 2008	08	Updated Hardware section.	1
May 2008	07	Removed Registration Card from Documentation.	2
		Added Z8F042ASJ020 to the Introduction section.	1
March 2008	06	Changed document title to Z8 Encore! XP® F042A Series Development Kit.	All
		Modified Table 2 in Schematics to incorporate changes to R15 from 220 Ohm to 0 Ohm. Added Note 3 to the Schematics.	10, 11
February 2008	05	Updated document with new Zilog logo and text. Updated document disclaimer. Implemented Style Guide.	All
December 2006	04	Changed Figure 14 to Figure 2. Updated schematics.	5, 10
August 2006	03	Removed Serial from Serial Smart Cable.	1
October 2005	02	Updated schematic to reflect board revision C. Added 20 MHz clock information, and updated power supply circuit.	6, 10, 11

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Safeguards

The following precaution must be observed when working with the devices described in this document:

Caution: *Always use a grounding strap to prevent damage resulting from electrostatic discharge (ESD).*

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Introduction

Zilog's Z8 Encore! XP® F042A Series MCU is the part of the line of Zilog® microcontroller products. The Z8 Encore! XP MCU Development Kit (Z8F04A28100KITG) allows you to get familiar with the hardware and software tools available with this product. This kit consists of the 4 KB version of the Z8 Encore!® Development Board that supports and presents the features of the Z8 Encore! XP F042A Series. This kit allows you to write application software and contains all supporting documents.

Z8F042ASJ020 is the silicon used in the board. For more details, refer to *Z8 Encore! XP® F0823 Series Product Specification (PS0243)* available for download at www.zilog.com.

This manual acquaints you with the Z8 Encore! XP F042A Series MCU Development Kit and provides instructions on setting up and using the tools to start building designs and applications.

Kit Contents

The Z8 Encore! XP F042A Series MCU Development Kit contains the following:

Hardware

The hardware in Z8 Encore! XP F042A Series Development Kit includes:

- Z8 Encore! XP F042A Series Development Board
- USB Smart Cable for PC to Z8 Encore! XP® F042A series development board (previous versions of the development kit used a Serial Smart Cable. Refer your original documentation for information on using the Serial Smart Cable).
- 5 V DC power supply

Software (on CD-ROM)

The software on CD-ROM provided with Z8 Encore! XP F042A Series Development Kit includes:

- ZDS II-Z8 Encore!® IDE with ANSI C-Compiler
- Sample code
- Document browser
- Acrobat Reader®



Figure 1. Z8 Encore! XP F042A Series Development Kit Contents

Documentation

- Quick Start Guide
- Z8 Encore! XP F042A Series technical documentation (on CD-ROM):
  - Development Kit User Manual
  - ZDS II - IDE User Manual
  - eZ8™ CPU User Manual

The sample code is installed with ZDS II and resides in the `<installation directory>\samples` in the disk drive.

The documentation can be installed with the DemoShield interface or can be viewed on the CD-ROM using the DemoShield menus and a PDF reader. A copy of the Acrobat installer is provided on the CD-ROM and can be installed from the DemoShield install screen. After installing the documentation, Windows Explorer can be used to select any document to be viewed with the PDF file viewer.

System/Software Requirements

An IBM PC (or compatible computer) with the following minimum configuration:

Supported Host System Configuration

- Win98 Second Edition/ WinNT 4.0 Service Pack 6/ Win2000 Service Pack 3/ WinXP Professional Service Pack 1
- PentiumII/233 MHz processor or higher up to Pentium IV, 2.8 GHz
- 96 MB RAM or more
- 25 MB hard disk space or more
- Super VGA video adapter

- CD-ROM
- One or more RS-232 communication ports

Installation

Follow the instructions in the Quick Start Guide for software installation and setup of the Z8 Encore! XP® F042A Series Development Kit.

Z8 Encore! XP® F042A Series Development Board

The Z8 Encore! XP F042A Series Development Board is a development and prototyping board for the Z8 Encore! XP F042A Series MCU. The board provides a tool to evaluate features of Z8 Encore! XP F042A Series MCU and to start developing an application before building the hardware.

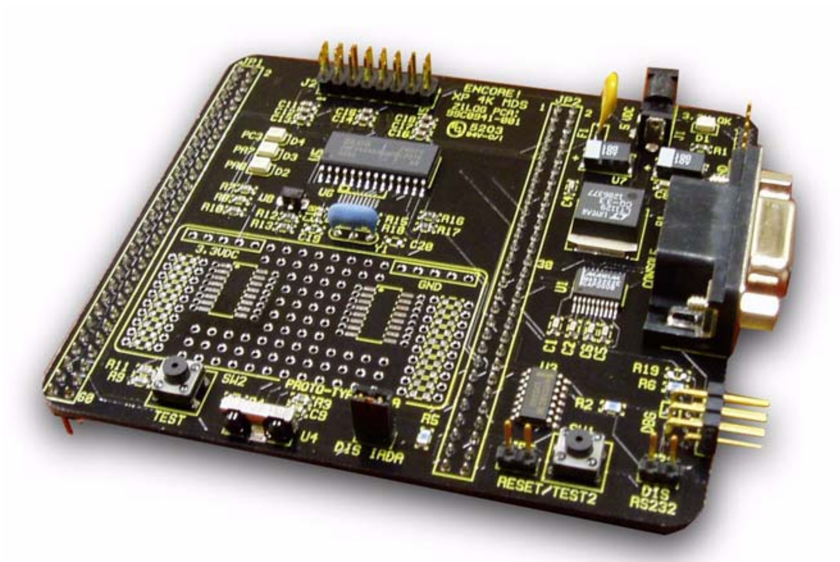


Figure 2. Z8 Encore! XP F042A Series Development Board

Features

The features of Z8 Encore! XP F042A Series Development Board include:

- Z8 Encore!® MCU (28-pin SOIC)
- 3 LEDs
- RS-232 interface
- IrDA transceiver
- Two pushbuttons, RESET and TEST
- 5 V DC power connector
- On-Chip Debugger interface
- 20 MHz Crystal (Y1)
- Header for ADC input
- Prototyping area
- External interface connectors JP1 and JP2
- 2.7 V to 3.6 V operating voltage with 5 V-tolerant inputs

Z8 Encore! XP F042A Series MCU

The Z8 Encore! XP F042A Series MCU is member of a family of Zilog® microcontroller products based on the 8-bit eZ8™ core CPU. The Flash in-circuit programming capability allows for faster development time and program changes in the field. The eZ8 core CPU is upward compatible with existing Z8® instructions. The rich peripheral set of the Z8 Encore! XP F042A Series makes it suitable for various applications including motor control, security systems, home appliances, personal electronic devices, and sensors.

The Development Board contains circuitry to support and present all the features of the Z8 Encore! XP F042A Series. The main features of the Z8 Encore! XP F042A Series include:

- eZ8 core CPU
- 4 KB Flash memory with in-circuit programming capability
- 1 KB register RAM
- 5-channel, 10-bit Analog-to-Digital Converter (ADC)
- Full-duplex UART
- I^2C interface (Master Mode only)
- Serial Peripheral Interface (SPI)
- Infrared Data Association (IrDA)-compliant infrared encoder/decoder
- Two 16-bit timers with capture, compare, and PWM capability
- Watchdog Timer (WDT) with internal RC oscillator
- Eleven (20-pin package) or nineteen (28-pin package) I/O pins
- Programmable priority interrupts
- On-Chip Debugger (OCD)
- Voltage Brownout Protection (VBO)
- Power-On Reset (POR)
- 2.7 V to 3.6 V operating voltage with 5 V-tolerant inputs
- Operating temperatures: 20 °C ±10 °C

For more information on the Z8 Encore! XP family of devices, refer to *Z8 Encore! XP® F0823 Series Product Specification (PS0243)* available for download at www.zilog.com.

UART with IrDA Endec

The Z8 Encore! XP F042A Series (component U5) contains a fully-functional, high-performance UART with Infrared Encoder/Decoder (ENDEC). The Infrared Endec is integrated with an on-chip UART allowing easy communication between the Z8 Encore! XP F042A Series and IrDA transceivers. Infrared communication provides secure, reliable, low-cost, point-to-point communication between PCs, PDAs, cell phones, printers and other infrared enabled devices.

Power and Communication Interfaces

Table 1 provides jumper information concerning the shunt status, functions, devices and defaults affected of jumpers JP3 and JP4.

Table 1. Jumpers JP3 and JP4

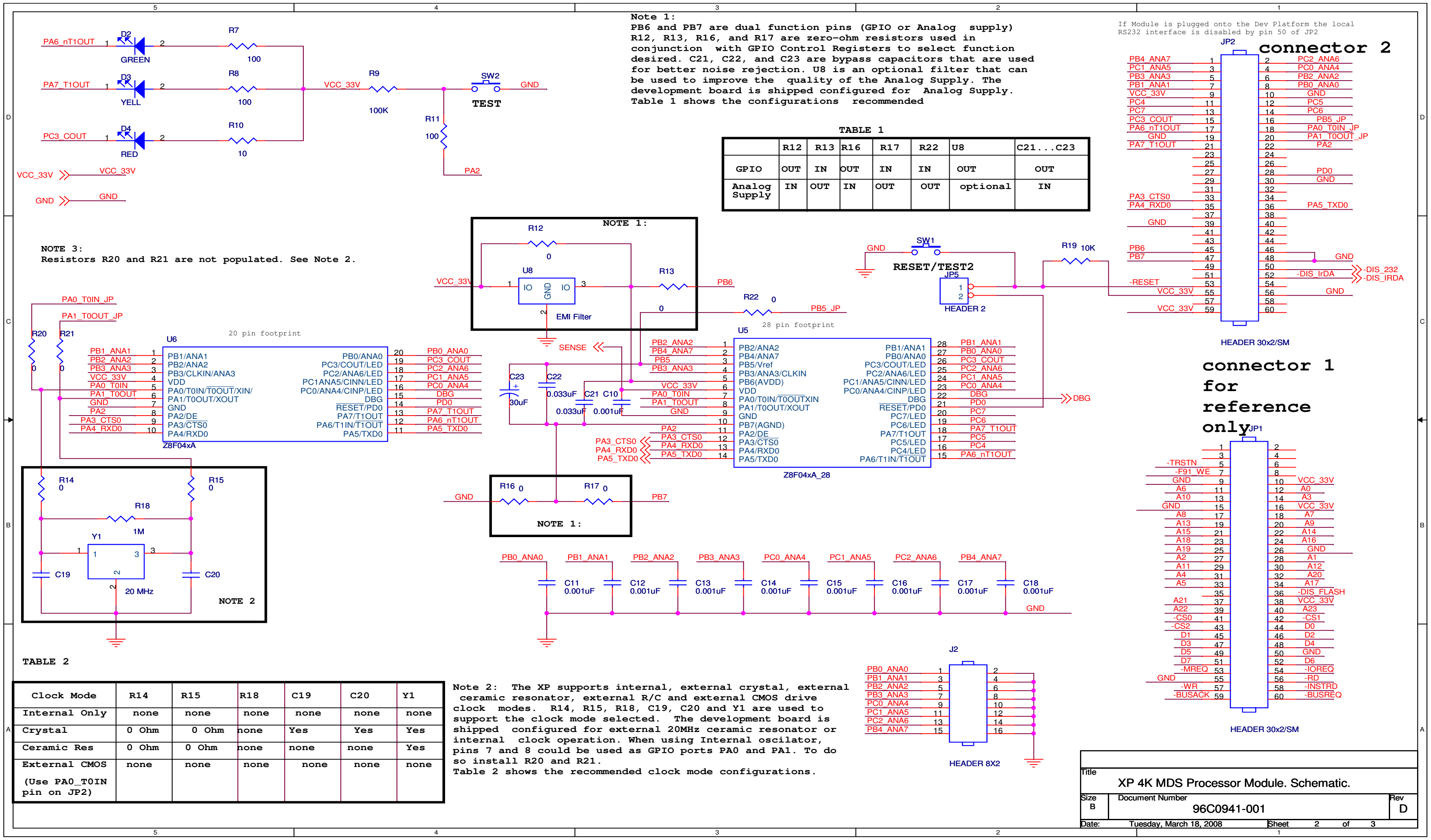
Jumper	Status	Device Affected	Status	Default
JP3*	OUT	RS-232 interface	Enabled	X
JP3	IN	RS-232 interface	Disabled	
JP4*	OUT	IrDA interface	Enabled	
JP4	IN	IrDA interface	Disabled	X
JP5	OUT	U5 $\overline{\text{RESET}}$/PD0	PD0 (GPIO)	X
JP5	IN	U5 $\overline{\text{RESET}}$/PD0	$\overline{\text{RESET}}$ when SW1 pressed	
* These jumpers must not be OUT at the same time.				

External Interface Headers JP1 and JP2

External interface headers JP1 and JP2 are displayed in the schematic in Figure 3 and Figure 4 on page 10.

Schematics

This section provides schematics for the Z8 Encore! XP® F042A Series Development Board.



Note 1:
PB6 and PB7 are dual function pins (GPIO or Analog supply) R12, R13, R16, and R17 are zero-ohm resistors used in conjunction with GPIO Control Registers to select function desired. C21, C22, and C23 are bypass capacitors that are used for better noise rejection. U8 is an optional filter that can be used to improve the quality of the Analog Supply. The development board is shipped configured for Analog Supply. Table 1 shows the configurations recommended

TABLE 1

	R12	R13	R16	R17	R22	U8	C21...C23
GPIO	OUT	IN	OUT	IN	IN	OUT	OUT
Analog Supply	IN	OUT	IN	OUT	OUT	optional	IN

TABLE 2

Clock Mode	R14	R15	R18	C19	C20	Y1
Internal Only	none	none	none	none	none	none
Crystal	0 Ohm	0 Ohm	none	Yes	Yes	Yes
Ceramic Res	0 Ohm	0 Ohm	none	none	none	Yes
External CMOS (Use PA0_T0IN pin on JP2)	none	none	none	none	none	none

Note 2: The XP supports internal, external crystal, external ceramic resonator, external R/C and external CMOS drive clock modes. R14, R15, R18, C19, C20 and Y1 are used to support the clock mode selected. The development board is shipped configured for external 20MHz ceramic resonator or internal clock operation. When using Internal oscilator, pins 7 and 8 could be used as GPIO ports PA0 and PA1. To do so install R20 and R21.
Table 2 shows the recommended clock mode configurations.

Figure 3. Schematic, Z8 Encore! XP F042A Series MCU Development Board, Page 1 of 2

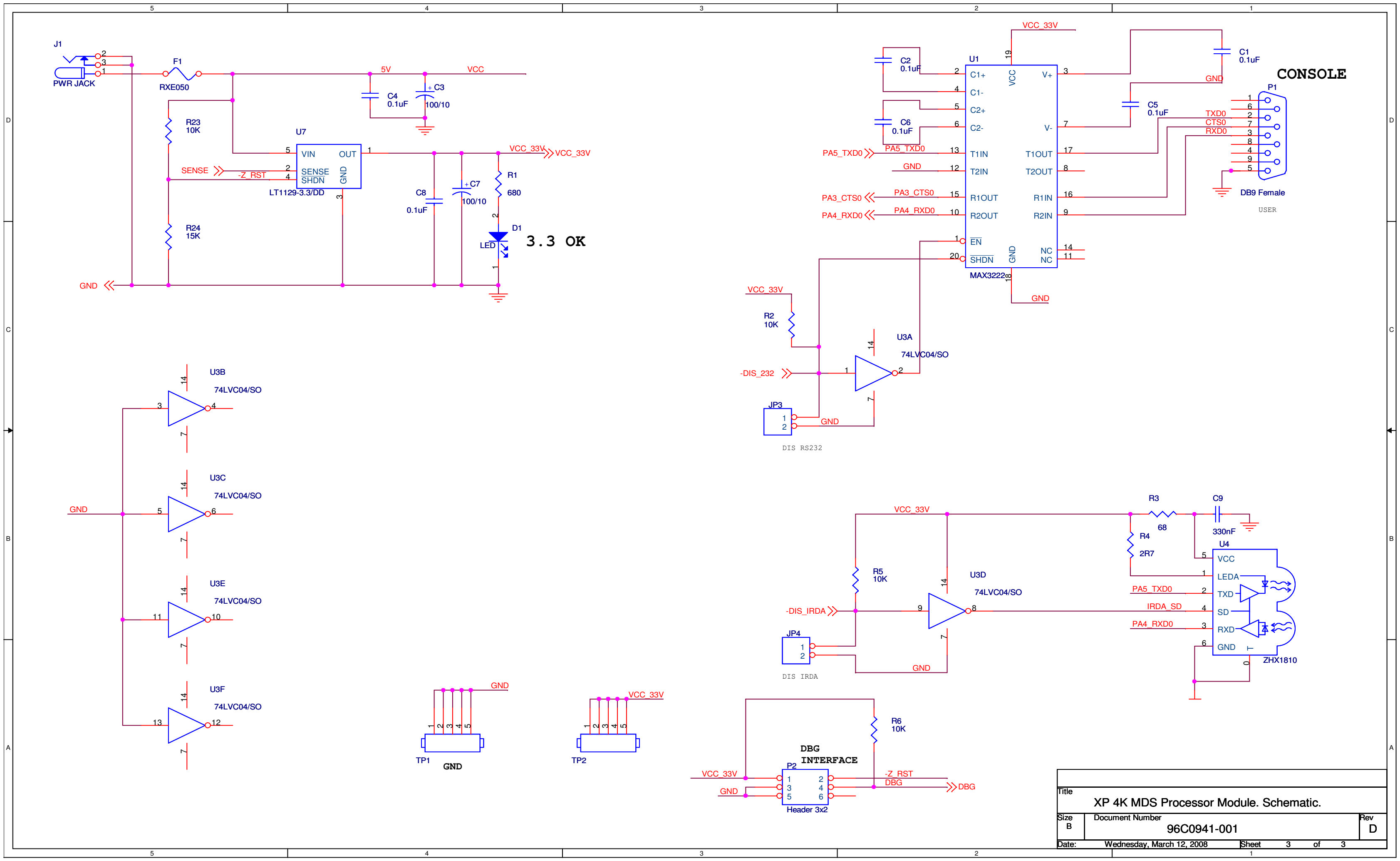


Figure 4. Schematic, Z8 Encore! XP F042A Series MCU Development Board, Page 2 of 2

Customer Support

For answers to technical questions about the product, documentation, or any other issues with Zilog's offerings, please visit Zilog's Knowledge Base at:

http://www.zilog.com/kb.

For any comments, detail technical questions, or reporting problems, please visit Zilog's Technical Support at:

http://support.zilog.com.

Warning: DO NOT USE IN LIFE SUPPORT

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As used herein

Life support devices or systems are devices which (a) are intended for surgical implant into the body, or (b) support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in a significant injury to the user. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

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